December 17, 1999
Ref. No.: EOS/ETS-121799-C03

National Aeronautics and
Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Attention: Mr. Willie Fuller
Code 581
Building 32, Room N212D

Subject: Contract No.: NAS9-98100
CSOC SODA Task Order Number GM36
EOSDIS Test System (ETS) Multimode Portable Simulator for PM-1 (MPS/PM-1) Delivery of the Release 3.0 Software

Dear Mr. Fuller:

We are pleased to deliver Release 3.0 of the ETS Multimode Portable Simulator for the PM-1 spacecraft (MPS/PM-1). This is the third delivery using our new Scalable, Integrated Multimission Simulation Suite (SIMSS) infrastructure and architecture with EOS PM-1 (Aqua) extensions, which we refer to as SIMSS/PM-1 throughout this delivery package.

The requirements to employ the PM-1 Project Data Base (PDB) to define and maintain telemetry nodes and to build and transmit telemetry packets have been implemented in this release. A draft copy of the SIMSS/PM-1 User's Guide for Release 3 will be available to users shortly, and an updated copy will be delivered to you.

This release requires that Oracle 8 for NT and Oracle Programmer for NT be installed for the PDB interface. Copies of the Oracle software on CD-ROM will be provided under separate cover.

This delivery package contains 12 attachments as listed below. A completed Mission Systems Configuration Management (MSCM) form is included in Attachment L. If you have any questions concerning this delivery, please call me at 301-805-3653.

Sincerely yours,

Estelle S. Noone
CSOC ETS Task Leader

Delivery Package Reviewed and Approved by:

Janice Swope
CSOC ETS Customer Service Representative

EOSDIS Test System (ETS) Multimode Portable Simulator for PM-1 (MPS/PM-1)
Delivery of the Release 3.0 Software
December 17, 1999 Ref. No.: EOS/ETS-121799-C03

The following attachments contain the details of the MPS software.

Attachment A - describes the delivery contents for this release
Attachment B - describes the operational changes
Attachment C - contains the instructions to build and install the software
Attachment D - contains any special operating instructions
Attachment E - contains a list of the resolved DRs
Attachment F - contains a list of the unresolved DRs
Attachment G - contains the matrix of requirements addressed by this release
Attachment H - contains the known system limitations
Attachment I - contains the release history summary matrix
Attachment J - contains a listing of the delivery media contents
Attachment K - contains documentation references
Attachment L - contains the Mission Systems Configuration Management (MSCM) form

Distribution: (* - Letter Only)

NASA	ATSC	Lockheed Martin	Raytheon	CSC
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Harbaugh, R. *				
Johns, A. *				Noone, E.
Kelly, A.	Unisys			Parlock, W.
Ondrus, P. *	Thompson, S.			Quintin, E.
Perkins, D. *				Swope, J. *
Rackley, M. *				
ESDIS Library				Task File

Attachment A – Description of Delivery Contents

The SIMSS/PM1 Release 3.0 consists of custom software executables that are being delivered on one CD-ROM. Two copies are being provided.

Enterprise Oracle and Oracle Programmer for Windows NT are necessary for operation of this release. Two copies of each are being provided on CD-ROM. The license to use Oracle belongs to the CSOC contract. Therefore, Oracle and Oracle Programmer may be installed only on CSOC computers.

A soft copy of this MPS/PM1 Release 3.0 delivery letter and set of attachments is being delivered. The attachments have been formatted on a 3.5" IBM PC diskette utilizing the MS WORD word processing tool.

Attachment B – Summary of Operational Changes

B.1 Operational Capabilities of SIMSS/PM-1 Release 3.0

(New or modified capabilities with this release are noted in *Italics*.)

Telemetry:

- *Generate one stream of telemetry formatted as EDUs*
- *Start or stop one telemetry stream*
- *Ingest the PM-1 PDB files*
- *Generate telemetry packets from information contained in the PM-1 PDB*
- *Maintain telemetry nodes from information contained in the PM-1 PDB*
- *Populate telemetry packets with data values from information contained in the PM-1 PDB*
- Display EDU data
- *Set values into telemetry nodes by mnemonic*
- *Display telemetry node values by mnemonic*
- Reset packet count for the telemetry stream
- Packet data will be static (incrementing byte counts) *until overridden by operator entry*
- Static packet data can be overwritten (by byte location) *and by modification of telemetry mnemonic*
- Incrementing packet sequence counters per APID
- Generation of individual APIDs can be inhibited
- Telemetry logs will be created (viewable by offline Hexedit program)
- Packet Headers and Packet Data are updated
- Packet data can be shown in hexadecimal or octal format and addressed in hexadecimal or decimal form
- Packet Sequence Counters can be reset
- Packet Sequence Counters can be modified
- Packet Version field can be modified
- *Packet APID field can be modified*
- Packet Type field can be modified
- Packet SH Flag field can be modified
- Packet Length field can be modified
- CUC can be modified
- Packet rate may be controlled
- CLCW transmitted via EDUs
- IP packets are transmitted with variable lengths
- CLCW can be overridden by the operator
- Transmission of CLCW can be inhibited

Command:

- Ingest type AD, BC, and BD commands
- Display Total CLTUs count
- Reset Total CLTUs count
- Display Rejected CLTUs count
- Reset Rejected CLTUs count
- Display Instrument commands count
- Reset Instrument commands count
- Display Spacecraft commands count
- Reset Spacecraft commands count
- Display BC commands count
- Reset BC commands count
- Display BD commands count
- Display current Spacecraft CLCW
- Update current CLCW
- Display current Instrument CLCW
- Validate commands based on individual, all, or none of the following validation criteria: CLTU Start and Tail Sequences, BCH Error Code, Transfer Frame Header Fields, FARM (Valid Frame Sequence), User Command Packet Header
- Generate event messages based on ingest
- Log raw commands (viewable by offline Hexedit program)
- Display raw command in hexadecimal or octal format addressed in either hexadecimal or decimal fashion
- Display command packet headers for instrument commands
- Display command packet headers for spacecraft commands

Time:

- Maintain and update SC time (GIRD)
- Maintain and update GMT time
- Synchronize SC and GMT times

Attachment C – Release 3.0 Installation Instructions

This attachment contains the instructions for installing the MPS/PM-1 Release 3.0 Server and Client, and the Oracle database software and the Project Data Base (PDB). At the end of this attachment are instructions for updating to a new version of the PDB.

Instructions for installation of the PM-1 Server and Client software:

1. Insert the delivery media into the appropriate drive.

2. Go to the files on the installation media:
   a) On the desktop, click on the Start button, and then select Run from the resulting menu.
   b) When the Run window appears select the Browse… button.
   c) From the Browse Window, select the Removable drive that contains the installation disk
   d) Three folders are then shown for the installation media: client, server and jdk.

3. To install the PM-1 Client:
   a) Click on the Client folder.
   b) From within the Client folder, double click on the Setup icon.
   c) The screen will be filled with a PM-1 Client background and a smaller window with the title "Welcome to PM-1 Client 3.0" will appear. Click on the Next button to proceed to the next step.
   d) The next window will contain the licensing agreement. Click on Yes to accept the agreement and proceed.
   e) After all of the files are copied, a window with the title "Setup Complete" will appear. Click on the Finish button to end.
   f) A PM-1 Client icon will now be installed on the desktop.

4. To install the PM-1 Server:
   a) Click on the Server folder.
   b) From within the Server folder, double click on the Setup icon
   c) A window with the title "Run Window" will appear. Click on the Okay button to proceed to the next step.
   d) The screen will then be filled with a PM-1 Server background and a window with the title of "Welcome to PM-1 Server 2.0" will appear. Click the Next button to proceed.
   e) A window with the title "Choose Destination" will appear. Click on the Next button to proceed.
   f) Then a window with the title "Select Program Folder" will appear. Click on the Next button.
   g) A window with the title "Start Copying Files" will appear. Click on the Next button to proceed.

h) Next a window will show the completion status as the files are copied. When the copying is complete click on the Next button to finish the installation.
i) A PM-1 Server icon will be installed on the desktop.

INSTALLING ORACLE SOFTWARE AND CONFIGURING THE PM-1 DATABASE

Two separate Oracle product groups are required for PM-1 Release 3.0, Oracle8 Enterprise 8.0.5.0.0 and Oracle 8i Programmer 8.1.5.0.0. Each product group is contained on a separate CD. The installation process for both is quick and easy. There are a few points to keep in mind:

- The installing account must have administrator privileges.
- The machine selected as the Oracle server must have a D: drive.
- The server must be re-booted after installing both product groups.

Installation Instructions for Oracle8 Enterprise 8.0.5.0.0

Insert the Oracle8 CD into the drive and follow the prompts provided below. The entire installation should take no more than 10 minutes.

Panel	Panel Title	User Action
1.	Oracle8 Enterprise Edition for Windows NT	1. Select **Begin Installation**
2.	Oracle Installation Settings	1. Company Name - enter **CSOC** 2. Oracle Home - Name Enter **DEFAULT_HOME** **3.** Oracle Home – Location Enter **D:\orant** **4.** Oracle Home – Language Enter **English** 5. Select **OK**
3.	Select Installation Options	1. Select **Oracle8 Enterprise Edition** 2. Select **OK**
4.	Select Cartridges and Options	1. Do **NOT** select anything from the list 2. Select **OK**
5.	Select a Starter Database configuration	1. Select **Typical Configuration** 2. Select **OK**
6.	Installing Legato Storage Manager	1. Select **NO**
7.	Installing Oracle Documentation	1. Select **Hard Drive** 2. Select **OK**
8.	Installation Complete	1. Select **NO** to exit installer
9.	Reboot Needed	1. Select **OK**

After the installation is complete, reboot the machine and log back in as the same user to install the Oracle Programmer software.

Installation Instructions for Oracle8i Programmer 8.1.5.0.0

Panel	Panel Title	User Action
1.	Oracle8i Enterprise Edition - Autorun	1. Select **Install/Deinstall Products**
2.	Oracle Universal Installer (O. U. I.)	1. Select **Next**
3.	O. U. I. - File Location	1. Source... **Accept the default** 2. Destination - Name Enter **DEFAULT_8I_HOME** 3. Destination - Path Enter **D:\orant8i** 4. Select **Next**
4.	O. U. I. - Available Products	1. Select **Oracle Programmer 8.1.5.0.0** 2. Select **Next**
5.	O. U. I. - Installation Types	1. Select **Custom Installation** 2. Select **Next**
6.	Available Product Components	1. Select **ProC/C++** which automatically selects 7 other items from the list. 2. Select **Next**
7.	O. U. I. - Component Location	1. **Do nothing** 2. Select **Next**
8.	O. U. I. - Oracle Protocol Support	1. Select **TCP/IP** and **Named Pipes** 2. Select **Next**
9.	O. U. I. - Summary of Products	1. Select **Install**
10.	O. U. I. - Install	When installation completes, next panel automatically pops up
11.	Net8 Configuration Tools Autostart	No action required. Next panel pops up automatically.
12.	Net8 Configuration Assistant Welcome	1. Select **Exit**. **NOTE**: This will generate a small ERROR panel. Ignore it and select OK. You will return to the Configuration Tools panel. 2. Select **Exit**
13.	End of Installation	1. Select **Exit** 2. Close original Oracle Installer panel

All Oracle software required to run the PM-1 simulator has been installed. You should now re-boot your workstation again and logon as the desired simulator user. During the Oracle8 Enterprise installation, a sample database was created. The next step is to load the PDB and modify that database to a form that is useable by the simulator. This process involves the following steps:

1. Create the directory structure shown below. Limitations in the SQL scripts used to ingest the PDB into Oracle make it necessary to create the directories exactly as shown.

d:	pm1_db	pdb_data
		scripts
		PDB_of_110899

2. Copy the contents of the "Database" directory from the PM-1 Simulator CD to the "scripts" directory just created.

   When that copy is complete, copy the "tlm_pkt2ndhdr.pdb" file from the "scripts" directory to the "pdb_data" directory.

3. Copy the desired version of the PDB from Toronto into the "PDB_of_110899" directory just created. At the time these directions were written the version of the PDB in use was in the "cmd_output_updated_11_23_99" subdirectory.

4. This step is required by limitations in the SQL scripts. Copy the PDB files into generic-named files in the "pdb_data" directory. If doing the copy in a DOS window use the following syntax example (NOTE that the PDB file has an imbedded date but the generic file doesn't):

   cp tlm_packet_110899.pdb D:\pm1_db\pdb_data\tlm_packet.pdb

   If using the drag and drop method, the files must be renamed after they are copied.

5. Perform the following steps to execute a SQL script in *SQL*Plus* to add the tables and user id required for PM-1.

   Select Start->Programs->Oracle for Windows NT->SQL*Plus 8.0 to start *SQL*Plus*

   Enter *system* for USER NAME and *manager* for PASSWORD then click on OK. HOST STRING is not required.

   Type the following to run the SQL script: *@D:\pm1_db\scripts\pm1bld*

   NOTE: The PM-1 simulator user account (userid ***stest,*** password ***etsmps1***) was created and the passwords for the *sys* and *system* accounts were changed to *etsmps1* during script execution.

6. Perform the following steps to execute a .BAT file to load the PDB files using SQL*Loader.

   Open a DOS window.

   Type the following to execute the .BAT file: *D:\pm1_db\scripts\PM1Loader.BAT*

7. Perform the following steps to execute another SQL script in *SQL*Plus* to perform final configurations on the PDB data.

   Select Start->Programs->Oracle for Windows NT->SQL*Plus 8.0 to start *SQL*Plus*

   Enter *stest* for USER NAME and *etsmps1* for PASSWORD then click on OK. HOST STRING is not required.

   Type the following to run the SQL script: *@D:\pm1_db\scripts\second_pass*

   Type exit to close the *SQL*Plus* window.

The database is now fully configured and loaded. To verify that the installation was successful, run the PM-1 simulator. Refer to the PM-1 System Users Guide (SUG) for the necessary instructions.

Attachment D – Special Operating Instructions

This attachment contains the special operating instructions for SIMSS/PM-1 Release 3.0.

Standard operating procedures are included in the User's Guide for SIMSS/PM-1. The User's Guide will be available from the ETS home page at http://esdis-it.gsfc.nasa.gov/ETS/ets.html.

LOADING A NEW VERSION OF THE PDB

When a new version of the PDB is released, the current contents of the database must be erased and the new data loaded. This very similar to the initial process described in Attachment C except that the PM-1 database already exists. You must erase the data, load the new PDB, and then configure it. This process involves the following steps:

NOTE
Limitations in the Sequel scripts require that the PDB files be placed in a specific directory for ingest into Oracle.
That directory is D:\ pm1_db\ pdb_data

1. Create a directory under the "pm1_db" to hold the new PDB flat files. A directory name something like "PDB_of_<*date*>" is suggested.

2. Copy the new PDB flat files from Toronto into the new directory.

3. Next, copy the new PDB files into generic-named files in the exact location shown below. If doing the copy in a DOS window use the following syntax example (NOTE that the PDB file has an imbedded date but the generic file doesn't):

   cp tlm_packet_110899.pdb D:\pm1_db\pdb_data\tlm_packet.pdb

   If using the drag and drop method, the files must be renamed after they are copied.

4. Select Start->Programs->Oracle for Windows NT->SQL*Plus 8.0 to start *SQL*Plus*

5. Enter *stest* for USER NAME and *etsmps1* for PASSWORD then click on OK. HOST STRING is not required.

6. Type the following to run the SQL script: *@D:\pm1_db\scripts\truncate*

7. Open a DOS window.

8. Type the following to execute the .BAT file: *D:\pm1_db\scripts\PM1Loader.BAT*

9. Select Start->Programs->Oracle for Windows NT->SQL*Plus 8.0 to start *SQL*Plus*

10. Enter *stest* for USER NAME and *etsmps1* for PASSWORD then click on OK. HOST STRING is not required.

11. Type the following to run the SQL script: *@D:\pm1_db\scripts\second_pass*

12. Type exit to close the *SQL*Plus* window.

Once your project has been created but before locking and running it, select the **PM-1 Spacecraft** module and then select **Configure**. A small login panel will pop up. Enter *stest* for USERNAME and *etsmps1* for PASSWORD then click on Accept. Verify that messages appear in the event log that indicate that the application was able to successfully connect to the database and retrieve packet and telemetry data.

Attachment E – Resolved Discrepancy Reports

The following Discrepancy Reports (DRs) have been closed by and are being delivered with SIMSS/PM-1 Release 3.0. The DRs are listed in the table below, which provides the DR Number, Status, Severity, Subsystem Name, and a short description. A full description of each DR follows the summary table. Complete information on all DRs may be accessed via the Internet at address http://iree.gsfc.nasa.gov/ddts/.

Summary of Closed Discrepancy Reports

Critical (1)	Urgent (2)	Routine (3)	Total
1	2	0	3

Status Definitions

N – New
A - Assigned Analysis
R - Analysis Entered
V - Assigned Verification
T – Tested
C – Closed
W – Withdrawn
P – Postponed
X – Duplicate

DDTS ID	DR #	Status	Sev	Subsystem	Description
SMOdr05733	ETS0345	V	1	MPS-PM/Aqua	Unable to update APID or packet length
SMOdr05707	ETS0344	V	2	MPS-PM/Aqua	Unexpected “lock ups”
SMOdr05391	ETS0325	V	2	MPS-PM/Aqua	Extended period of operation occasionally causes abnormal termination

DR: SMOdr05733(ETS0345) Related NCR: Submitted: 991111

Status: ASSIGNED-VERIFY Class: MPS-PM/Aqua Asgnd-Verify: 991206

Title: Unable to update APID or packet length

********** Problem (for SMOdr05733) **********
Unable to use the tools provided to update APID or packet lengths, the tools exist and accept inputs, they just don't change the data being output from the simulator. This problem has halted testing of PM-1 telemetry requirements.

********** Solution Description (Added 991206 by equintin) **********

With release 3.0 have re-enabled setting of APID field. Intent of changes to APID, length, and other packet header fields is to create perceived errors at the receiving system. To create entirely new packets the user must edit the tlm_packet PDB file and reingest the PDB.

DR: SMOdr05707(ETS0344) Related NCR: Submitted: 991103

Status: ASSIGNED-VERIFY Class: MPS-PM/Aqua Asgnd-Verify: 991206

Title: unexpected "lock ups"

********** Problem (for SMOdr05707) **********
The MPS will "lock up" unexpectedly at times for no apparent reason. Sometimes, a "blue screen" is generated. When this occurs, we are forced to bring the MPS all the way down then back up again in order to recover.

********** Solution Information (Added 991206 by equintin) **********

Modified ODBC accessing method: using a new thread to get event message requests from Client into a queue for low priority inquiry from ODBC.
Modified/Corrected several coding errors/deficiencies from both the server and SIMSS Library via the help of PURIFY and Great-Circle memory debugging tools.
Improved some weak logic points in the PM1 module that would cause infinite looping when anomalies are encoundered.
Finally, removed dependence on ODBC completely.

DR: SMOdr05391(ETS0325) Related NCR: Submitted: 990916

Status: TESTED Class: MPS-PM/Aqua Tested: 990924

Title: Extended period of operation occasionally causes abnormal termination

********** Problem (for SMOdr05391) **********
When left running for an extended period of time, the system will eventually terminate abnormally.

Attachment F – Unresolved Discrepancy Reports

All open MPS-PM/Aqua Discrepancy Reports (DRs) are listed in the following table. The table includes the DR Number, Status, Severity, Subsystem Name, and a short description. A full description of each DR follows the summary table. Complete information on all DRs may be accessed via the Internet at address http://iree.gsfc.nasa.gov/ddts/.

Summary of Open Discrepancy Reports

Critical (1)	Urgent (2)	Routine (3)	Change Request (3)	Total
0	0	9	4	13

Status Definitions

N – New
A - Assigned Analysis
R - Analysis Entered
V - Assigned Verification
T – Tested
C – Closed
W – Withdrawn
P – Postponed
X – Duplicate

DDTS ID	DR #	Status	Severity	DR Type	Description
SMOdr05701	ETS0338	A	3	Change Request	PM MPS sim window management
SMOdr05705	ETS0342	A	3	Change Request	Defaults for input & output modules
SMOdr05706	ETS0343	A	3	Change Request	Removing links
SMOdr05856	ETS0355	A	3	Problem	MPS outputting incorrect times
SMOdr05857	ETS0356	A	3	Problem	Improper Primary Header
SMOdr05859	ETS0357	A	3	Change Request	Modifying APID data
SMOdr05860	ETS0358	A	3	Problem	Improper secondary header
SMOdr05920	ETS0359	N	3	Problem	Server crashes on exit
SMOdr05921	ETS0360	N	3	Problem	Cannot modify Instrument CLCW values through the GUI window
SMOdr05922	ETS0361	N	3	Problem	Packet contents do not reflect initial telemetry values
SMOdr05923	ETS0362	N	3	Problem	PB-5 time in EDOS Service Header is 2 days in the past
SMOdr05924	ETS0363	N	3	Problem	Telemetry data values entered by operator are not validated
SMOdr05925	ETS0364	N	3	Problem	Enabling an APID changes the transmit frequency

DR: SMOdr05701 (ETS0338) Related NCR: Submitted: 991103

Status: ASSIGNED-ANALYSIS Class: MPS-PM/Aqua Asgnd-Analysis: 991109

Title: PM MPS sim window management

SUBMITTAL INFORMATION		ANALYSIS INFORMATION	
Project:	ETS	Assignee1/Org:	Ernest Quintin
DR Type:	Change Request	Phone:	301-805-3649
Rel/Ver:	2.1	Email:	equintin@csc.com
Subsystem:	MPS-PM/Aqua	Assignee2/Org:	
Module:	Simulator	Phone:	
Affected-Requirement:		Email:	
Test Phase:	unit test	Date due (Sev=1,2):	
Severity:	3		
Date found:	991101		
Location:	Denver		
Submitter:	Vince Ruland		
Organization:	EMOS		
Phone number:	720-895-4068		
Email:	vhruland@west.raytheon.com		

********** Problem (Added 991103 by vruland) **********
Any window brought up or opened will disappear behind the main project screen as soon as it's clicked on. In order to have access to these windows, we have to ensure that a portion of the windows are visible outside of the main screen so they can be clicked on. Suggest a better window management akin to a "start" menu bar in windows that allows the user to select any window at any time, whether it is buried under other windows or not.

DR: SMOdr05705 (ETS0342) Related NCR: Submitted: 991103

Status: ASSIGNED-ANALYSIS Class: MPS-PM/Aqua Asgnd-Analysis: 991109

Title: defaults for input & output modules

SUBMITTAL INFORMATION		ANALYSIS INFORMATION	
Project:	ETS	Assignee1/Org:	Ernest Quintin
DR Type:	Change Request	Phone:	301-805-3649
Rel/Ver:	2.1	Email:	equintin@csc.com
Subsystem:	MPS-PM/Aqua	Assignee2/Org:	
Module:	Simulator	Phone:	
Affected-Requirement:		Email:	
Test Phase:	unit test	Date due (Sev=1,2):	
Severity:	3		
Date found:	991030		
Location:	Denver		
Submitter:	Vince Ruland		
Organization:	EMOS		
Phone number:	720-895-4068		
Email:	vhruland@west.raytheon.com		

********** Problem (Added 991103 by vruland) **********
Defaults for the input and output modules are needed so that we don't always have to reconfigure the settings for a new project each time.

DR: SMOdr05706 (ETS0343) Related NCR: Submitted: 991103

Status: ASSIGNED-ANALYSIS Class: MPS-PM/Aqua Asgnd-Analysis: 991109

Title: Removing links

SUBMITTAL INFORMATION
Project: ETS
DR Type: Change Request
Rel/Ver: 2.1
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: unit test
Severity: 3
Date found: 991029
Location: Denver
Submitter: Vince Ruland
Organization: EMOS
Phone number: 720-895-4068
Email: vhruland@west.raytheon.com

ANALYSIS INFORMATION
Assignee1/Org: Ernest Quintin
Phone: 301-805-3649
Email: equintin@csc.com
Assignee2/Org:
Phone:
Email:
Date due (Sev=1,2):

********** Problem (Added 991103 by vruland) **********
There should be an easier way to remove an incorrect link or a link made in error rather than going into the design mode to delete it. After the link is deleted, the create links mode has to be re-entered in order to continue creating links.

DR: SMOdr5856 (ETS0355) Related NCR: Submitted: 991207

Status: ASSIGNED-ANALYSIS Class: ETS/MPS-PM(Aqua)

Title: MPS outputting incorrect times

SUBMITTAL INFORMATION
Project: ETS
Rel/Ver: 2.2
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: unit test
Severity: 3
Date found: 991206
Location: Denver
Submitter: Vince Ruland
Organization: EMOS
Phone number: 720-895-4068
Email: vhruland@west.raytheon.com

********** Problem (Added 991207 by vruland) **********
Spacecraft and ground times in the raw data output from the sim do not match the times set into the sim. The date is 2 days off and the time is approximately 5 hours and 50 minutes different.

DR: SMOdr05857 (ETS0356) Related NCR: Submitted: 991207

Status: ASSIGNED-ANALYSIS Class: ETS/MPS-PM(Aqua)

Title: Improper Primary Header
SUBMITTAL INFORMATION
Project: ETS
Rel/Ver: 2.2
Subsystem: MPS-PM/Aqua
Test Phase: unit test
Severity: 3
Date found: 991205
Location: Denver
Submitter: Vince Ruland
Organization: EMOS
Phone number: 720-895-4068
Email: vhruland@west.raytheon.com

********** Problem (Added 991207 by vruland) **********
In the primary header of a tlm packet, the bith shich informs whether a secondary header is present (secondary header flag) is improperly set to one (1) for SUROM/TIE packets. No SUROM/TIE packets should have this flag set.

DR: SMOdr05859 (ETS0357) Related NCR: Submitted: 991207

Status: ASSIGNED-ANALYSIS Class: ETS/MPS-PM(Aqua)

Title: Modifying APID data
SUBMITTAL INFORMATION
Project: ETS
Rel/Ver: 2.2
Subsystem: MPS-PM/Aqua
DR Type: Change Request
Test Phase: unit test
Severity: 3
Date found: 991205
Location: Denver
Submitter: Vince Ruland
Organization: EMOS
Phone number: 720-895-4068
Email: vhruland@west.raytheon.com

********** Problem (Added 991207 by vruland) **********
Enhancement request:
It would be nice to be able to modify APID data blocks by as many as 8 bytes uniquely at one time from the modify packet window in the PM-Sim module control. Currently the MPS allows you to enter 5 nibbles but only uses the last two nibbles when modifying the packet.

DR: SMOdr05860 (ETS0358) Related NCR: Submitted: 991207

Status: ASSIGNED-ANALYSIS Class: ETS/MPS-PM(Aqua)

Title: Improper secondary header
SUBMITTAL INFORMATION
Project: ETS
Rel/Ver: 2.2
Subsystem: MPS-PM/Aqua
Test Phase: unit test
Severity: 3
Date found: 991206
Location: Denver
Submitter: Vince Ruland
Organization: EMOS
Phone number: 720-895-4068
Email: vhruland@west.raytheon.com

********** Problem (Added 991207 by vruland) **********
Bits 1-3 of the secondary header are identifying an improper spacecraft epoch. The ICD specifies that bits 1-3 should be 010 for a PM epoch of 1/1/58. Currently these bits are set to 001 with release 2.2, a workaround has already been implemented by manually editing these bits but all packets with secondary headers should contain this information without having to edit them.

DR: SMOdr05920 (ETS0359) Related NCR: Submitted: 991217

Status: NEW Class: MPS-PM (Aqua)

Title: Server crashes on exit
SUBMITTAL INFORMATION
Project: ETS
DR Type: Problem
Rel/Ver: 3.0
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: acceptance test
Severity: 3
Date found: 991213
Location: GSFC
Submitter: Ernest Quintin
Organization: ETS Dev Group
Phone number: 301-805-3649
Email: equintin@csc.com

********** Problem (Added 991217 by equintin) **********
Normal shutdown of the MPS/PM-1 simulator is to disconnect the client (GUI) from the server, exit the client, then exit the server. The server crashes when it is disconnected from the client, or when the client is exited.

There is no operational impact because the crash only happens
during shutdown.

DR: SMOdr05921 (ETS0360) Related NCR: Submitted: 991217

Status: NEW Class: MPS-PM(Aqua)

Title: Cannot modify Instrument CLCW values through the GUI window
SUBMITTAL INFORMATION
Project: ETS
DR Type: Problem
Rel/Ver: 3.0
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: acceptance test
Severity: 3
Date found: 991213
Location: GSFC
Submitter: Ernest Quintin
Organization: ETS Dev Group
Phone number: 301-805-3649
Email: equintin@csc.com

********** Problem (Added 991217 by equintin) **********
Fields of the Instrument CLCW cannot be modified using the
Override CLCWs display. Additionally, calling up this display
results in error messages being inserted into the event log.

A workaround exists. Instrument CLCW fields may be modified
by using the "set" directive.

DR: SMOdr05922 (ETS0361) Related NCR: Submitted: 991217

Status: NEW Class: MPS-PM(Aqua)

Title: Packet contents do not reflect initial telemetry values
SUBMITTAL INFORMATION
Project: ETS
DR Type: Problem
Rel/Ver: 3.0
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: acceptance test
Severity: 3
Date found: 991213
Location: GSFC
Submitter: Ernest Quintin

Organization: ETS Dev Group
Phone number: 301-805-3649
Email: equintin@csc.com

********** Problem (Added 991217 by equintin) **********
Initial telemetry packet data contents do not correspond to initial telemetry data values. Telemetry point initial values are all set to zero; the telemetry packets initially contain an incrementing byte count.

DR: SMOdr05923 (ETS0362) Related NCR: Submitted: 991217

Status: NEW Class: ETS/MPS-PM(Aqua)

Title: PB-5 time in EDOS Service Header is 2 days in the past
SUBMITTAL INFORMATION
Project: ETS
DR Type: Problem
Rel/Ver: 3.0
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: acceptance test
Severity: 3
Date found: 991217
Location: GSFC
Submitter: Ernest Quintin
Organization: ETS Dev Group
Phone number: 301-805-3649
Email: equintin@csc.com

********** Problem (Added 991217 by equintin) **********
The PB-5 time in the EDOS Service Header is 2 days in the past.

A workaround exists. The user should call up the Ground Station display/set GMT screen and set the GMT to two days in the future.

DR: SMOdr05924 (ETS0363) Related NCR: Submitted: 991217

Status: NEW Class: MPS-PM (Aqua)

Title: Telemetry data values entered by operator are not validated
SUBMITTAL INFORMATION
Project: ETS
DR Type: Problem
Rel/Ver: 3.0
Subsystem: MPS-PM/Aqua

Module: Simulator
Affected-Requirement:
Test Phase: acceptance test
Severity: 3
Date found: 991217
Location: GSFC
Submitter: Ernest Quintin
Organization: ETS Dev Group
Phone number: 301-805-3649
Email: equintin@csc.com

********** Problem (Added 991217 by equintin) **********
No validation is being performed on the values entered in the Set Directive Window. If the value entered exceeds the number of bits specified for the telemetry point, high order bits are truncated when the packet is built. If you enter a hex value, the telemetry point gets set to zero. Binary values are interpreted as decimal. In addition, the system does not notify the user concerning the invalid entry

DR: SMOdr05925 (ETS0364) Related NCR: Submitted: 991217
Status: NEW Class: MPS-PM (Aqua)

Title: Enabling an APID changes the transmit frequency
SUBMITTAL INFORMATION
Project: ETS
DR Type: Problem
Rel/Ver: 3.0
Subsystem: MPS-PM/Aqua
Module: Simulator
Affected-Requirement:
Test Phase: acceptance test
Severity: 3
Date found: 991217
Location: GSFC
Submitter: Ernest Quintin
Organization: ETS Dev Group
Phone number: 301-805-3649
Email: equintin@csc.com

********** Problem (Added 991217 by equintin) **********
When you enable or disable an APID with the Control Packet panel, the transmission frequency also gets modified to whatever value is in the panel. If the panel's default value (0.0) is still displayed, the transmission rate gets changed to 0.1 (ten per second). To avoid this behavior, the user must know what the current rate is (from PDB files or database) and then set the rate to the desired value. Should be able to

enable or disable an APID without worry about the transmission rate.

Attachment G – Requirements Matrix
(Compliance changes from Release 2.0 are in bold)

Requirement Specification	Requirement Description	Compliance (Full/Partial/None)	Comment
	The SIMSS/PM-1 GUI and simulator shall be year 2000 compliant.	F	
PMCMD-01	SIMSS/PM-1 shall be capable of selecting a desired version of the PDB at operator request during initialization.	**P**	**Only one version of PDB available at a time. Desired version of PDB must be ingested into Oracle database prior to running SIMSS/PM-1.**
PMCMD-01.1	An operator shall place all current versions of the PDB files in a predefined location in the file system and shall remove all outdated versions of the PDB files from that location.	N	
PMCMD-02	SIMSS/PM-1 shall execute directives that start and stop logging of commands.	F	Log modules do not allow a user to stop and restart logging to the same file. Each start requires a new log file name or the previously logged data will be lost. The Log module should be enhanced to allow appending to an existing file.
PMCMD-03	SIMSS/PM-1 shall execute commands that enable or disable any element of the command validation process.	F	
PMCMD-03.1	The command subsystem shall query an external interface to determine which elements of command validation are enabled.	F	
PMCMD-03.2	The command subsystem shall validate the command elements if validation is enabled. The command validation elements are CLTU start and tail sequence validation, Codeblock BCH Parity validation, Transfer frame header validation, FARM Protocol validation and User command Packet header validation.	F	This requirement should be modified to remove the CLTU validation element.
PMCMD-03.3	When the CLTU Start and Tail sequences validation element is enabled, the command subsystem will verify that the CLTU's 16 bit start and 64 bit tail sequences match the values defined in the ICD. When this element is disabled, the start and tail sequences are ignored. If this CLTU validation fails, an event message will be generated and the entire CLTU will be discarded.	**P**	This requirement should be modified or deleted. A design change made it necessary to parse the input for CLTUs instead of assuming that the item received was a single CLTU. This validation of CLTU start and tail sequences can no longer be disabled.
PMCMD-03.4	When the codeblock BCH parity validation element is enabled, the command subsystem will verify that the BCH parity byte matches a computed value and that the spare bit is equal to zero. When this element is disabled, the parity byte is assumed to be valid. If any codeblock of a CLTU fails validation, an event message will be generated and the entire CLTU will be discarded. The BCH parity calculation is the same as for the EOS AM-1 spacecraft.	F	

PMCMD-03.5	When the Transfer Frame Header validation element is enabled, the command subsystem will verify that all of the fields of the Transfer Frame Header except the sequence number match expected values and ranges as defined in the ICD. When this element is disabled, the Transfer Frame Header values are assumed to be valid. If the Transfer Frame Header validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW for the Transfer Frame's virtual channel will also be updated with error information.	F	
PMCMD-03.6	When the FARM validation element is enabled, the command subsystem will verify that the Transfer Frame sequence number is valid as expected for FARM-1 protocol as defined in the ICD. When this element is disabled, the Transfer Frame sequence number is assumed to be valid. If the FARM validation fails, an event message will be generated, the appropriate CLCW will be updated and the entire Transfer Frame will be discarded.	F	
PMCMD-03.7	When the Command Packet Header validation element is enabled, the command subsystem will verify that the Command Packet Header fields are as defined in the ICD. When this element is disabled, the Command Packet Header is assumed to be valid. If the Command Packet Header validation fails, an event message will be generated and the Command Packet will be discarded. Currently there is a spacecraft telecommand packet format and an instrument command packet format.	F	
PMCMD-04	SIMSS/PM-1 shall execute command directives that override the CLCW.	F	
PMCMD-05	SIMSS/PM-1 shall provide the capability to respond to that subset of spacecraft commands that are defined in the PM-1 PDB End item verifiers file.	N	
PMCMD-05.1	The command subsystem shall match a received command bit pattern to a command mnemonic in the PDB. Based on the command mnemonic, and end-item verifier telemetry mnemonic and value will be found in PDB information. If an end-item verifier telemetry mnemonic is found, it will be set to the PDB defined value.	N	
PMCMD-06	SIMSS/PM-1 shall simulate spacecraft command acceptance according to the COP-1 protocol.	F	
PMCMD-06.1	SIMSS/PM-1 shall perform type AD spacecraft acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.	F	

PMCMD-06.1.1	SIMSS/PM-1 shall reject type AD spacecraft commands and post a command rejected event message if the lockout bit is set in the spacecraft CLCW.	F	
PMCMD-06.01.2	SIMSS/PM-1 shall reject type AD spacecraft commands, post a command rejected message, and set the lockout bit in the spacecraft CLCW if (1)the frame sequence count in the transfer frame header is more than 90 counts greater than or more than 90 counts less than(modulo 256)the Report Value field of the spacecraft CLCW and(2) FARM-1 protocol checking is enabled.	F	
PMCMD-06.01.3	SIMSS/PM-1 shall reject type AD spacecraft commands, post a command rejected message, and set the Retransmit bit in the spacecraft CLCW if(1)the frame sequence count in the transfer frame header is between one and 89 counts greater than(modulo 256)the contents of the Report Value field of the spacecraft CLCW and (2)FARM-1 protocol checking is enabled.	F	
PMCMD-06.01.4	SIMSS/PM-1 shall reject type AD spacecraft commands and post a command rejected message if (1) the Frame Sequence count in the transfer frame header is between one and 90 counts less than (modulo 256) the contents of the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.	F	
PMCMD-06.01.5	SIMSS/PM-1 shall clear the spacecraft CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the spacecraft VCID.	F	
PMCMD-06.01.6	SIMSS/PM-1 shall set the spacecraft CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the spacecraft VCID.	F	
PMCMD-06.01.7	SIMSS/PM-1 shall increment the Report Value field (modulo 256) of the spacecraft CLCW upon receipt of a type AD spacecraft command whose Frame Sequence Count matches the current spacecraft CLCW Report Value field contents, providing that FARM-1 protocol checking is enabled.	F	
PMCMD-06.02	SIMSS/PM-1 shall perform type AD instrument command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.	F	
PMCMD-06.02.1	SIMSS/PM-1 shall reject type AD instrument commands and post a command rejected event message if the Lockout bit is set in the instrument CLCW.	F	

PMCMD-06.02.2	SIMSS/PM-1 shall reject type AD instrument commands, post a command rejected message, and set the Lockout bit in the instrument CLCW if (1) the Frame Sequence count in the transfer frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.	F	
PMCMD-06.02.3	SIMSS/PM-1 shall reject type AD instrument commands, post a command rejected message, and set the Retransmit bit in the instrument CLCW, if (1) the Frame Sequence count in the Transfer Frame header is between one and 90 counts greater than modulo 256) the report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.	F	
PMCMD-06.02.4	SIMSS/PM-1 shall reject type AD instrument commands, post a command rejected message if (1) the Frame Sequence count in the Transfer Frame header is between one and 89 counts greater than (modulo 256) the report Value field of the instrument CLCW and (2)FARM-1 protocol checking is enabled.	F	
PMCMD-06.02.5	SIMSS/PM-1 shall clear the instrument CLCW Lockout bit upon receipt of an UNLOCK Control command (type BC) containing the instrument VCID.	F	
PMCMD-06.02.6	SIMSS/PM-1 shall set the instrument CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (type BC) containing the instrument VCID.	F	
PMCMD-06.02.7	SIMSS/PM-1 shall increment the Report Value field (modulo 256) of the instrument CLCW upon receipt of a type AD instrument command whose Frame Sequence count matched the current instrument CLCW Report Value field contents, providing that FARM-1 protocol checking is enabled.	F	
PMCMD-07	SIMSS/PM-1 shall provide the capability to read and interpret flags in spacecraft command headers.	P	The flags in the Transfer Frame and Primary Packet headers are read and interpreted. Additional headers may need to be interpreted in order to identify commands. This requirement will be refined.
PMCMD-08	SIMSS/PM-1 shall provide the capability to validate all headers of received data.	P	This requirement will be refined.
PMCMD-09	SIMSS/PM-1 shall provide the capability to monitor and display command processing status.	F	
PMCMD-10	SIMSS/PM-1 shall store received commands for posttest review subject to specified storage capacities.	F	

PMCMD-11	SIMSS/PM-1 shall simulate spacecraft command validation processing using information from the PDB.	N	
PMCMD-12	SIMSS/PM-1 shall generate a simulator event message whenever a valid command is received.	P	
PMCMD-13	SIMSS/PM-1 shall generate a simulator event message whenever a command error is detected.	P	
PMCMD-14	SIMSS/PM-1 shall provide the capability to verify the received EOS spacecraft commands by updating the two command link control words (CLCW).	F	
PMCMD-15	SIMSS/PM-1 shall execute directives that configure command processing for IP mode.	F	
PMCMD-16	SIMSS/PM-1 shall execute directives that set the expected values within the Command Data Block (CDB) header.	N	
PMCMD-17	SIMSS/PM-1 shall be capable of receiving command data as UDP command blocks.	F	
PMCMD-18	SIMSS/PM-1 shall be capable of receiving command data blocks.	F	
PMCMD-19	SIMSS/PM-1 shall receive spacecraft and memory loads and shall store the load data in the simulated memory.	N	
PMCMD-20	SIMSS/PM-1 shall perform a CRC validation in the load data and shall set a pass/fail indicator in telemetry.	N	
PMCMD-21	SIMSS/PM-1 shall process commands that request or configure for a Spacecraft Controller Computer memory dump.	N	
PMCMD-22	SIMSS/PM-1 interface with the EOC shall comply with the command interface formats and protocols specified in the EDOS to EGS Elements Interface document.	P	The simulator does not fill in all fields of all headers. Some formats are still being redefined by the project.
PMCMD-23	SIMSS/PM-1 shall update multiple command counters.	N	
PMCMD-24	SIMSS/PM-1 shall interpret both VCID 0 and VCID 1 commands.	P	Transfer Frame headers and Packet headers are recognized for both virtual channels.
PMCMD-25	SIMSS/PM-1 shall interpret multipart commands.	N	
PMGUI-01	The SIMSS/PM-1 GUI shall accept and validate all operator directives.	P	All defined directives have been implemented.
PMGUI-02	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that set spacecraft time and GMT.	F	
PMGUI-03	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that configure command processing for IP mode.	F	
PMGUI-04	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that enable or disable any element of command validation.	F	

PMGUI-05	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that set the CLCW.	F	
PMGUI-06	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that configure telemetry processing for IP mode.	F	
PMGUI-07	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that set packet intervals for all real-time telemetry.	F	
PMGUI-08	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands to start and stop telemetry transmission.	F	
PMGUI-09	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands that set values of telemetry parameters (based on mnemonic).	**F**	**The GUI window has not yet been implemented. The operator must use the "set" directive.**
PMGUI-10	The SIMSS/PM-1 GUI shall accept directives that result in erroneous telemetry header values	F	
PMGUI-11	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands to turn on and off selected orbit modeling.	N	Modeling requirement TBD
PMGUI-12	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands to change between static, table or algorithm models.	N	Modeling requirement TBD
PMGUI-13	Creation of simulation timelines (scenario files) shall be performed offline via a text editor.	N	
PMGUI-14	Execution of a simulation timeline results in TBD directives being sent to the SIMSS/PM-1 simulator.	N	
PMGUI-15	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands to start and stop logging of commands.	F	
PMGUI-16	The SIMSS/PM-1 GUI shall build and forward display requests for all EDOS telemetry status displays.	F	
PMGUI-17	The SIMSS/PM-1 GUI shall provide at least one status display to the operator, showing key information about the configuration of the simulator.	F	
PMGUI-18	The SIMSS/PM-1 GUI shall provide the capability to display command packets received to the operator.	F	
PMGUI-19	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands to start and stop logging of telemetry.	F	
PMGUI-20	The SIMSS/PM-1 GUI shall provide the capability to display telemetry packets and EDUs transmitted, to the operator.	F	
PMGUI-21	The SIMSS/PM-1 GUI shall update the telemetry and command status for display periodically, as required.	F	
PMGUI-22	The SIMSS/PM-1 GUI shall provide the capability to display the current network and multicast configuration to the operator.	F	

PMGUI-23	SIMSS/PM-1 shall execute directives that set spacecraft time and GMT.	F	
PMGUI-24	The SIMSS/PM-1 GUI shall build and forward simulation configuration commands to set the IP address and port numbers.	F	
PMGUI-25	SIMSS/PM-1 shall display GMT and spacecraft times.	F	
PMGUI-26	SIMSS/PM-1 shall display EDOS Service Header.	N	
PMGUI-27	SIMSS/PM-1 shall display Telemetry packet header.	F	
PMGUI-28	SIMSS/PM-1 shall display event messages.	F	
PMGUI-29	SIMSS/PM-1 shall display CLCW.	F	
PMGUI-30	SIMSS/PM-1 shall display mnemonic of command received.	N	
PMGUI-31	SIMSS/PM-1 shall display TLM status.	F	
PMGUI-32	SIMSS/PM-1 shall display command status.	F	
PMTLM-01	SIMSS/PM-1 shall execute directives that start and stop logging of telemetry.	F	
PMTLM-02	SIMSS/PM-1 shall execute directives that configure the transmission of telemetry.	N	
PMTLM-03	SIMSS/PM-1 shall execute directives that set packet generation rates for all real-time APIDs generated by the PM-1 spacecraft.	**F**	
PMTLM-04	SIMSS/PM-1 shall execute directives that set the value of any telemetry parameter by mnemonic.	**F**	**The GUI window has not yet been implemented. The operator must use the "set" directive.**
PMTLM-05	SIMSS/PM-1 shall execute directives that set the value of any location in the PM-1 simulated spacecraft memory.	N	
PMTLM-06	SIMSS/PM-1 shall execute directives that request the value of any telemetry parameter for display in raw data.	**F**	**The GUI window has not yet been implemented. The operator must use the "get" directive.**
PMTLM-07	SIMSS/PM-1 shall execute console directives that request the contents of any telemetry packet	**F**	
PMTLM-08	SIMSS/PM-1 shall execute telemetry directives that request the value of any location or block of locations in spacecraft memory.	N	
PMTLM-09	SIMSS/PM-1 shall set initial telemetry parameter values from information extracted from the PDB and user provided files.	N	
PMTLM-10	SIMSS/PM-1 shall execute telemetry directives that control the PM-1 Solid State Recorder pointers.	N	
PMTLM-11	SIMSS/PM-1 shall provide the capability to insert simulated time codes in telemetry packet headers.	F	
PMTLM-12	SIMSS/PM-1 shall provide for the storage of telemetry to be used as playback data.	N	

PMTLM-13	SIMSS/PM-1 shall provide the capability to generate and transmit telemetry using APIDS identical to the PM-1 spacecraft.	P	PDB must be supplied for full implementation of this requirement.
PMTLM-14	SIMSS/PM-1 shall format telemetry parameters into packets as specified in the PM-1 PDB packet definitions for S-band telemetry.	**F**	
PMTLM-15	SIMSS/PM-1 shall provide the capability to insert fill data into generated test data.	N	
PMTLM-16	SIMSS/PM-1 shall send out telemetry packets at specified intervals of spacecraft time. These intervals shall be as defined for each APID by the PDB and shall be modifiable by the operator.	**F**	
PMTLM-17	SIMSS/PM-1 shall be capable of setting values into fields of telemetry packet headers.	**F**	
PMTLM-18	SIMSS/PM-1 shall provide the capability to transmit up to two streams of telemetry.	F	
PMTLM-19	SIMSS/PM-1 shall execute telemetry directives that start and stop the transmission of data.	F	
PMTLM-20	SIMSS/PM-1 shall generate EDUs and EDOS data headers based on the User Datagram Protocol (UDP) format definitions.	F	
PMTLM-21	SIMSS/PM-1 shall be capable of simulating memory dumps. SIMSS/PM-1 shall build packets based on the contents of simulated memory.	N	
PMTLM-22	SIMSS/PM-1 shall provide the capability to simulate EOS PM-1 low-rate spacecraft return-link data.	**F**	
PMTLM-23	SIMSS/PM-1 shall allow modification of any field within the EDOS data header.	N	
PMTLM-24	SIMSS/PM-1 shall provide the capability of transmitting the CLCW in the form of EDUs.	**F**	
PMTLM-25	SIMSS/PM-1 shall transmit EDUs on an as built basis.	F	
PMTLM-26	SIMSS/PM-1 shall provide the capability to transmit EDUs using the UDP protocol.	F	
PMTLM-27	SIMSS/PM-1 shall provide the capability to enable and disable the transmission of CLCW EDUs.	**F**	
PMTLM-28	SIMSS/PM-1 shall provide for the storage of EDUs.	N	
PMTLM-29	SIMSS/PM-1 interface with the EOC shall comply with the telemetry interface formats and protocols specified in the EDOS to EGS Elements interface documents.	F	
PMTLM-30	SIMSS/PM-1 shall provide the capability to accept PM-1 telemetry data by electronic transmission and by physical media.	N	
PMTLM-31	SIMSS/PM-1 shall be capable of transmitting the contents of a user provided file containing PM-1 telemetry data.	N	

PMTLM-32	SIMSS/PM-1 shall be capable of maintaining an internally generated time code.	P	Presently system time is used to maintain time code. An internal timing card will be used in a future release.
PMTLM-33	SIMSS/PM-1 shall set, adjust, and operate the spacecraft clock as commanded.	N	
PMTLM-34	SIMSS/PM-1 shall employ an offline utility to convert the ASCII-formatted PDB into a binary format useable by SIMMS/PM-1.	**P**	**The telemetry point and telemetry packet definition files are being converted. Command files will be added in a later release.**
PMTLM-35	SIMSS/PM-1 shall use the PDB to determine the APID number and length of valid PM-1 telemetry packets.	**F**	
PMTLM-36	SIMSS/PM-1 shall use the PDB to determine the number and mnemonics of telemetry parameters.	**F**	
PMTLM-37	SIMSS/PM-1 shall use the PDB to define raw-to-EU conversions for telemetry parameters. SIMSS/PM-1 shall support both linear and polynomial conversions.	N	
PMTLM-38	SIMSS/PM-1 shall use the PDB to determine valid SIMSS/PM-1 command formats.	N	
PMTLM-39	SIMSS/PM-1 shall use the PDB to determine telemetry end-item verifiers for commands.	N	
PMTLM-40	SIMSS/PM-1 shall execute modeling directives that enable or disable selected orbit modeling.	N	Modeling requirement TBD
PMTLM-41	SIMSS/PM-1 shall execute modeling directives that associate any telemetry parameter with a predefined model.	N	Modeling requirement TBD
PMTLM-42	SIMSS/PM-1 shall execute modeling directives that change between static, table or algorithm models.	N	Modeling requirement TBD
PMTLM-43	The SIMSS/PM-1 GUI shall acknowledge each operator request within 2 seconds of entry.	F	
PMTLM-44	The SIMSS/PM-1 GUI shall start execution of each operator request within 5 seconds of entry.	F	
PMTLM-45	SIMSS/PM-1 shall provide the operator with an offline capability to access model functions and coefficients.	N	Modeling requirement TBD
PMTLM-46	SIMSS/PM-1 shall provide the operator with an offline capability to translate ASCII-formatted files containing static, table and algorithm orbit modeling information into a binary form readable by SIMSS/PM-1.	N	Modeling requirement TBD
PMTLM-47	SIMSS/PM-1 shall be capable of maintaining an internal time code to a resolution of 200 milliseconds.	N	
PMTLM-48	SIMSS/PM-1 shall provide the capability to store up to 8MB of transmitted EDUs.	F	
PMTLM-49	SIMSS/PM-1 shall receive CLTUs in command data blocks and output EDUs (packets and CLCWs).	F	

PMTLM-50	SIMSS/PM-1 shall generate telemetry based on four Spacecraft Controllers. The telemetry contents shall be based on packet lists and format tables provided by the PM-1 project.	**F**	Actual telemetry generation is based on information contained in the PDB.

Attachment H – System Limitations

H.1 SIMSS/PM1 Release 3.0 Limitations

The following limitations apply to SIMSS/PM1 Release 3.0.

Problem Description	Workaround
Projects saved from a previous version of the simulator cannot be loaded under Release 3.0	All saved projects must be rebuilt and resaved using Release 3.0.
When logging more than one stream of data, the use of default log file names will corrupt logged data. This occurs because all streams will be written to the same log, since the log file default names are identical.	When logging more than one stream, rename the log files to make them unique.
Log modules do not allow a user to stop and restart logging to the same file. Each start/restart requires a new log file name or the previously logged data will be overwritten.	Users should be aware of this limitation. In order to save previously logged data, always specify a new log file before starting or restarting a log module.
The validation of the CLTU start and tail sequences cannot be disabled. A change in the design requires the simulator to parse the input buffer for CLTUs. The start and tail sequences are the delimiters.	This should not be problem unless the commands sent by the user do not have a CLTU start sequence of $EB90_{16}$ and a tail sequence of C5C5 C5C5 C5C5 $C579_{16}$ (as specified in the ICD).
The Instrument CLCW cannot be modified via the GUI window	Use the set directive to modify the Instrument CLCW. See the end of section "SCPM1-4.2.1 Mission Specific Container Items" on page 20 of the user's guide for the names of Instrument CLCW directive items.
There is no GUI window to view or modify telemetry data values by mnemonic.	Use the set and get directives to modify or view telemetry values by mnemonic. The syntax to view a telemetry parameter value is "get *mnemonic*". The retrieved value will appear in the event message display in decimal. The syntax to set a telemetry parameter value is "set *mnemonic* < decimal integer>". The mnemonic may be cut and pasted from a PDB flat file or from the event message window by using Ctrl-C to copy and Ctrl-V to paste.

H.2 Assumptions

The following assumptions have been made based upon current information available for the PM-1 spacecraft:

1. The input buffer for commanding for Release 3.0 is defined to be 900 bytes long. The Command Data Block (CDB) messages may contain multiple CLTU messages.

2. Additionally, each AD Transfer Frame is assumed to contain one complete Packet.

Attachment I - Release History Summary Matrix

Attached is the release history summary matrix which reflects the MPS/PM1 Release 3.0 delivery.

Release History Summary Matrix									
SYSTEM:	SIMSS/PM1								
RELEASE NUMBER		1.0	1.1	2.0	2.1	2.2	3.0		
DELIVERY DATE		7/30/99	9/2/99	9/24/99	10/25/99	11/18/99	12/17/99		
CONFIGURATION ITEM	CI NO.								
Core (client)	1.1	1.0	1.0	2.0	2.0	2.0	3.0		
Core (server)	1.2	1.0	1.0	2.0	2.0	2.2	3.0		
SC-PM1 (client)	1.3	1.0	1.0	2.0	2.0	2.0	3.0		
SC-PM1 (server)	1.4	1.0	1.0	2.0	2.1	2.2	3.0		
GS (client)	1.5	1.0	1.0	2.0	2.0	2.0	3.0		
GS (server)	1.6	1.0	1.0	2.0	2.0	2.0	3.0		
IP input (client)	1.7	1.0	1.1	2.0	2.0	2.0	3.0		
IP input (server)	1.8	1.0	1.1	2.0	2.0	2.0	3.0		
IP output (client)	1.9	1.0	1.1	2.0	2.0	2.0	3.0		
IP output (server)	2.0	1.0	1.1	2.0	2.0	2.0	3.0		

DQM (client)	2.1	*	*	*	*	*	*		
DQM (server)	2.2	*	*	*	*	*	*		
Logging (client)	2.3	1.0	1.1	2.0	2.0	2.0	3.0		
Logging (server)	2.4	1.0	1.1	2.0	2.0	2.0	3.0		

* To be delivered in a future release

Attachment J - Delivery Details

J.1 Hardware for MPS/PM-1 unit in GSFC, Building 32 Room S9

Qty	Common Name	Model [Serial No.]	Mfg	CSOC No.	Description
1	Computer	E-4200 001-343-8943	Gateway	C0060047	Intel Pentium II 400 Mhz w /512 Cache, 128 MB SDRAM PC100 6ns Micron, Matrox Millenium II 8MB AGP Video card, Toshiba 32x SCSI CD ROM Drive, Seagate 9.1 GB hard disk, IOMEGA 100 mb internal zip drive
1	Monitor	VX1100 811053233	Gateway	C0060041	21" Monitor
1	Mouse	Intellimouse 2570734-10000	Gateway		
1	Keyboard	Q9045A1837	Gateway		
1	Timing Card	PCIDCC20-P	Industrial Computer Source		PCI counter/timer card

J.2 Software

A complete listing of the SIMSS/PM-1 software file names will be available upon request.

Attachment K - Documentation References

The following documents have been employed as the main sources for direction and information in producing Release 3.0 of the SIMSS/PM-1 simulator.

Document	Location
EOS PM-1 Spacecraft to EOS Ground System Interface Control Document dated November, 1999 (more commonly known as "The Space to Ground ICD")	1
National Aeronautics and Space Administration, Goddard Space Flight Center (GSFC), ICD Between the EOS PM-1 Spacecraft and the EOS Ground System Appendix Z : Additional Control Center Interface Information Revision 5, dated September 15, 1999	1
Data Format Control Document for the Earth Observing System (EOS) Mission Operations Segment (EMOS) Project Database Volume 1: PM-1 Users Revision A, dated November, 1999	4
TRW, EOS PM-1 Spacecraft Flight Software Requirements Specification, ES-SDA-001	1
TRW, Earth Observing System Common Spacecraft Program Flight Software User's Guide, No.: D26696, latest version dated July 31, 1998	1
TRW, EOS Common Spacecraft Command Allocation Document, No.: D25099, (preliminary)	1
TRW, Earth Observing System (EOS) EOS PM-1 Telemetry Allocation Document, No.: D25100, (preliminary)	1
TRW, EOS PM-1 Spacecraft Equipment Specification for Transponder Interface Electronics, No.: EQ4-4957, latest version dated 11 February, 1999	1
TRW, Interface Control Document Between the Earth Observing System (EOS) Data and Operations System (EDOS) and the EOS Ground System (EGS) Elements CDRL B301	2
Consultative Committee for Space Data Systems, CCSDS 102.0-B-4: Packet Telemetry Blue Book, Issue 4, Nov. 1995	3
--, CCSDS 202.1-B-1: Telecommand Part 2.1 – Command Operations Procedures Blue Book, Issue 1, Oct. 1995	3
NASA, GSFC, Earth Observing System Data and Information System (EOSDIS) Test System (ETS) Functional and Performance Requirements for the PM-1 Spacecraft, Sep. 1998	-

Location Legend:

Number	Designation
1	http://www.omitron.com/eosaqua/mittrw.HTM
2	http://esdis-it.gsfc.nasa.gov:8080/servlet/DOCcat? nCatType= ICD
3	http://ccsds.org/publications.html
4	http://www.omitron.com/eosaqua/mitrefdocs.html

Attachment L — Mission Systems Configuration Management Form

This attachment contains the completed Mission Systems Configuration Management (MSCM) form for the delivery of SIMSS/PM1 Release 3.0.

Mission Systems Configuration Management Form

1. ORIGINATOR	2. ORGANIZATION	3. PHONE	4. E-MAIL ADDRESS
Estelle Noone	CSC	301-805-3653	enoone@csc.com

5. ELEMENT	6. INSTALLATION PRIORITY	7. TRACKING NUMBER (Assigned by CM Office)
ETS (SIMSS/PM1)	Routine	

8. SOURCE CHANGE REQUEST(S):

ETS delivery of MPS for EOS PM-1 (SIMSS/PM1)

9. APPROVALS

Element Manager _____ / /

Flight Ops Director _____ / /

Operations Manager _____ / /

10. DELIVERED SYSTEM (Check all that apply)

	Name	Version	Media Identification	Identification Date
☐ Hardware				
☒ Software	SIMSS/PM1	R3.0	CD-ROM	12/17/99
☐ Database				
☒ Documentation:				
MPS/PM1 delivery package		N/A	3.5" Diskette	12/17/99
☐ Other				

11. CHANGE DESCRIPTION

Release 3 of MPS/PM-1 (SIMSS/PM-1)

12. ATTACHMENT(S): Check if YES ☒

Description: SIMSS/PM1 Release 3.0 delivery package (cover letter with attachments) dated 12/17/99

13. CM OFFICE USE

	Location (Bldg/Room)	Slot location(s)
Hardware	/	
Media	/	
Documentation	/	

Installation date / /

CM Office Signature _____

Form MSCM (970327)